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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 09/715,909 Confirmation No.: 5613
Applicant(s): Flannagan et al.
Filed: November 17, 2000
Art Unit: 1647
Examiner: Robert Clinton Hayes
Title: NOVEL BT TOXIN RECEPTORS FROM
LEPIDOPTERAN INSECTS AND METHODS OF USE

Docket No.: 035718/204664
Customer No.: 29122

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT
37 C.F.R. § 1.121

Sir:

In response to the Office Action dated January 31, 2005, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims beginning on page 2 of this paper.

Remarks/Arguments begin on page 7 of this paper.

The Claims:

1. (Previously Presented) An isolated nucleic acid molecule having a nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity, wherein said nucleotide sequence is selected from the group consisting of:

- a) the nucleotide sequence set forth in SEQ ID NO:1;
- b) a nucleotide sequence having at least 80% identity to the nucleotide sequence of a)
- c) a nucleotide sequence having at least 85 % identity to the nucleotide sequence of a);
- d) a nucleotide sequence having at least 90% identity to the nucleotide sequence of a);
- e) a nucleotide sequence having at least 95 % identity to the nucleotide sequence of a);
- f) a nucleotide sequence encoding a polypeptide comprising the ligand binding site encoded by nucleotides 4038-4547 of SEQ ID NO:1; and
- g) a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO:2.

2. (Previously Presented) The nucleic acid molecule of claim 1, wherein said *Bt* toxin is a Cry1A toxin.

3. (Previously Presented) The nucleic acid molecule of claim 2, wherein said Cry1A toxin is a Cry1A(b) toxin.

4-6 (Cancelled)

7. (Previously Presented) An expression cassette comprising a nucleotide sequence encoding a polypeptide selected from the group consisting of:

- a) a polypeptide having the amino acid sequence set forth in SEQ ID NO:2;

- b) a *Lepidopteran* insect receptor polypeptide having at least 80% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said polypeptide has *Bt* toxin binding activity;
- c) a *Lepidopteran* insect receptor polypeptide having at least 85% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said polypeptide has *Bt* toxin binding activity;
- d) a *Lepidopteran* insect receptor polypeptide having at least 90% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said polypeptide has *Bt* toxin binding activity;
- e) a *Lepidopteran* insect receptor polypeptide having at least 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said polypeptide has *Bt* toxin binding activity; and
- f) a *Lepidopteran* insect receptor polypeptide comprising the ligand binding site encoded by nucleotides 4038-4547 of SEQ ID NO:1 and having *Bt* toxin binding activity.

8-9 (Cancelled)

10. (Previously Presented) An expression cassette comprising at least one nucleotide sequence according to claim 1, wherein said nucleotide sequence is operably linked to a promoter capable of initiating the transcription of the nucleotide sequence .

11. (Previously Presented) The expression cassette of claim 10, wherein said promoter is capable of initiating the transcription of the nucleotide sequence in an insect cell or a mammalian cell.

12. (Previously Presented) The expression cassette of claim 10 wherein said promoter is capable of initiating the transcription of the nucleotide sequence in a microorganism.

13. (Original) The expression cassette of claim 12 wherein said microorganism is yeast or bacteria.

14. (Previously Presented) A vector for delivery of a nucleotide sequence to a cell, the vector comprising at least one nucleotide sequence according to claim 1.

15. (Previously Presented) An isolated cell containing the vector of claim 14.

16. (Previously Presented) An isolated transformed cell having stably incorporated within its genome a nucleotide sequence according to claim 1.

17. (Original) The transformed cell of claim 16, wherein said cell is a plant cell.

18. (Original) The transformed cell of claim 17, wherein said plant cell is monocotyledonous.

19-27 (Cancelled)

28. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity is a nucleotide sequence having at least 85 % identity to the nucleotide sequence set forth in SEQ ID NO:1.

29. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity is a nucleotide sequence having at least about 95 % identity to the nucleotide sequence set forth in SEQ ID NO:1.

30. (Previously Presented) The isolated nucleic acid molecule of claim 29 wherein said nucleic acid molecule comprises the nucleotide sequence set forth in SEQ ID NO:1.

31. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleic acid molecule comprises a nucleotide sequence encoding the amino acid sequence set forth in SEQ ID NO:2.

32. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity is a nucleotide sequence encoding a polypeptide comprising the ligand binding site encoded by nucleotides 4038-4547 of SEQ ID NO:1.

33. (Canceled)

34. (Previously Presented) The expression cassette of claim 7, wherein said expression cassette comprises a nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having at least 85% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said *Lepidopteran* insect receptor polypeptide having at least 85% sequence identity to the amino acid sequence set forth in SEQ ID NO:2 has *Bt* toxin binding activity.

35. (Previously Presented) The expression cassette of claim 34, wherein said expression cassette comprises a nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having at least 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said *Lepidopteran* insect receptor polypeptide having at least 95% sequence identity to the amino acid sequence set forth in SEQ ID NO:2 has *Bt* toxin binding activity.

36. (Previously presented) The expression cassette of claim 35, wherein said expression cassette comprises a nucleotide sequence encoding a polypeptide having the amino acid sequence set forth in SEQ ID NO:2.

37. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity is a nucleotide sequence having at least 80% identity to the nucleotide sequence set forth in SEQ ID NO:1.

38. (Previously Presented) The isolated nucleic acid molecule of claim 1 wherein said nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having *Bt* toxin binding activity is a nucleotide sequence having at least 90% identity to the nucleotide sequence set forth in SEQ ID NO:1.

39. (Previously Presented) The expression cassette of claim 7, wherein said expression cassette comprises a nucleotide sequence encoding a *Lepidopteran* insect receptor polypeptide having at least 80% sequence identity to the amino acid sequence set forth in SEQ ID NO:2, wherein said *Lepidopteran* insect receptor polypeptide having at least 80% sequence identity to the amino acid sequence set forth in SEQ ID NO:2 has *Bt* toxin binding activity.